SBC84823 Series

Intel® Atom™ All-In-One

Capa Board with LVDS

User's Manual

Disclaimers

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Caution

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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CHAPTER 1
INTRODUCTION



The **SBC84823** is a Capa board with support for Intel® ATOM™ processor Z510PT/Z520PT, and integrates chipset Intel® System Controller Hub US15WPT that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. The board has one 200-pin unbuffered SODIMM sockets for DDR2 400/533 MHz SO-DIMM memory, maximum memory capacity up to 2GB. It also features dual-display by VGA and LVDS, Gigabit/Fast Ethernet, one serial ATA port, six USB 2.0 high speed compliant, built-in high definition audio codec that can achieve the best stability and reliability for industrial applications. It provides you with unique embedded features, such as four serial ports (4x RS-232) and 3.5'' form factor that applies an extensive array of PC peripherals.

1.1 Specifications

- **CPU**
  - **Intel® ATOM™ processor Z510PT/Z520PT**
- **System Chipset**
  - **Intel® System Controller Hub US15WPT**
- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 8Mbit FWH Flash, DMI, Plug and Play
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - "Load Optimized Default" to backup customized setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - One x 200-pin unbuffered DDR2 SODIMM socket
  - Maximum to 2GB DDR2 400/533 MHz memory
- **Onboard Multi I/O**
  - Controller: Winbond W83627DHG-P
  - Serial Ports: four ports for RS-232
- **CompactFlash™ Socket**
  - One CompactFlash™ Type II low profile slot
- **USB Interface**
  - Six USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Display**
  - One 2 x 20-pin LVDS connector, one 7-pin wafer connector for inverter control
  - One D-sub 15-pin slim type connector
- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Ethernet**
  - One port with Intel82574IT for Gigabit/Fast Ethernet
  - One RJ-45 connector
- **Audio**
  - HD Audio compliant (with Speaker/line-out & MIC-in) via ALC888
  - Supports multi-channel audio stream, 32-bit sample depth, and sample rate up to 192KHz
  - Line-in/Line-out/MIC-in
- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)
- **Form Factor**
  - 3.5'' form factor

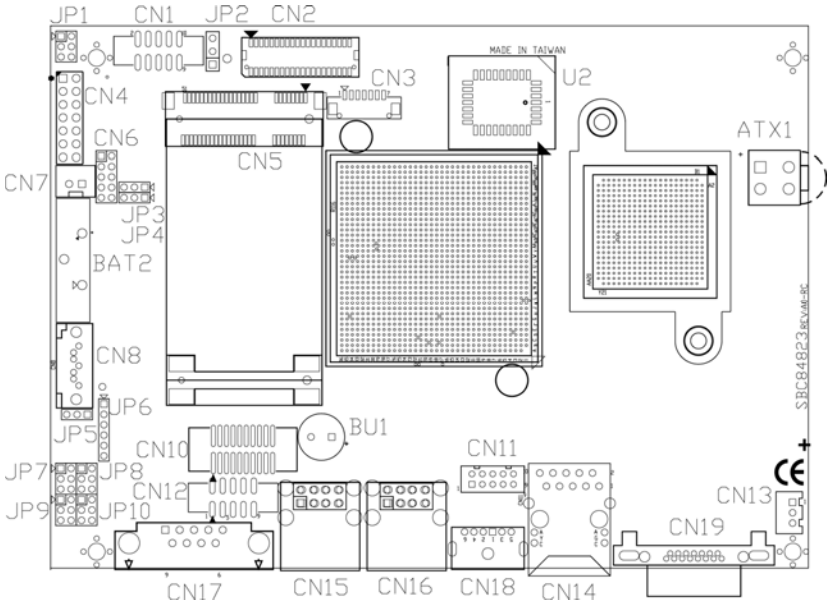
NOTE *All specifications and images are subject to change without notice.*

1.2 Utilities Supported

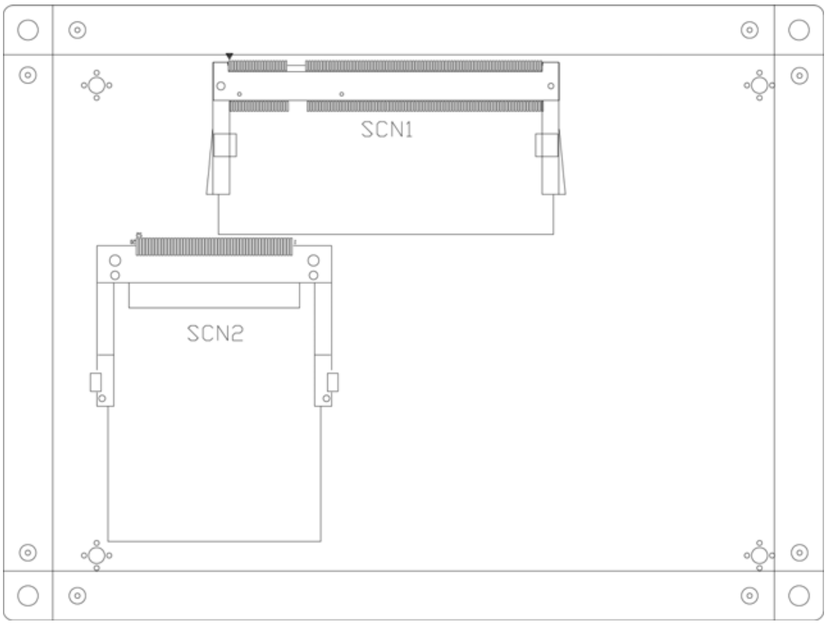
- Chipset Driver
- Ethernet Driver
- Graphic Drivers
- Audio Drivers

CHAPTER 2
JUMPERS AND CONNECTORS

2.1 Board Layout

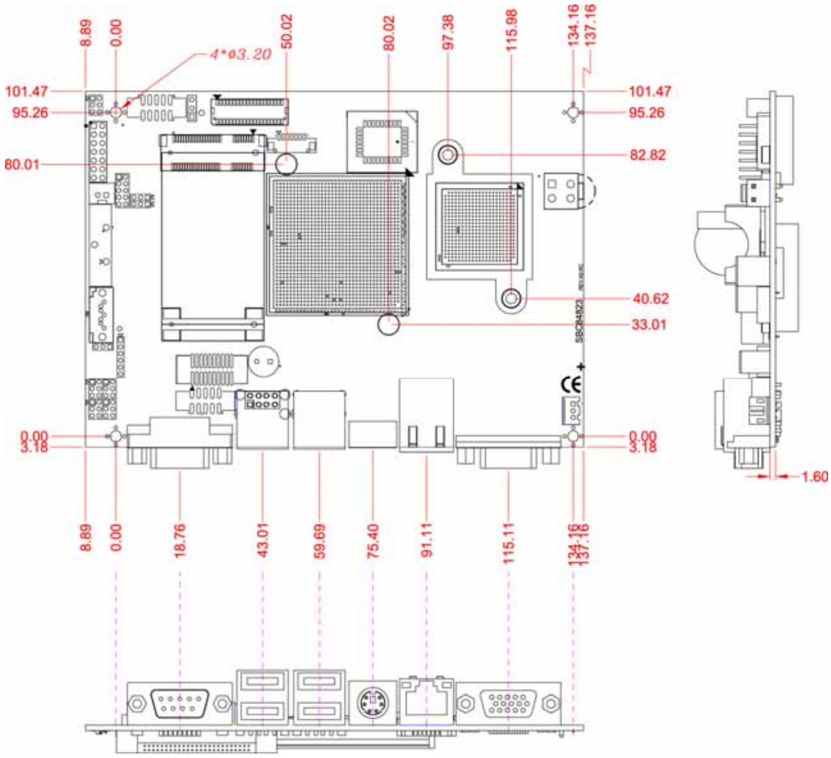


Component Side

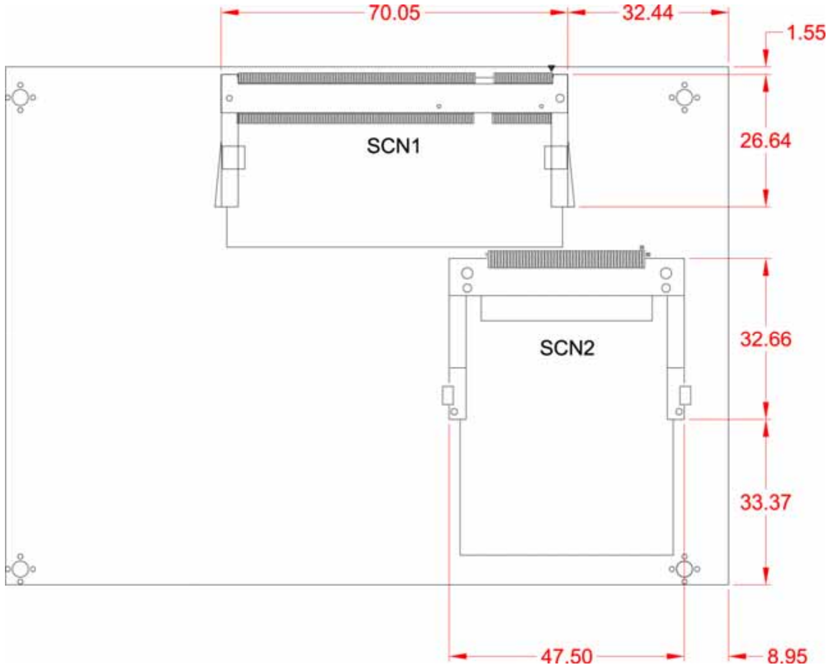


Solder Side

2.2 Board Dimensions and Fixing Holes



Component Side



Solder Side

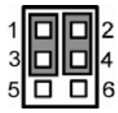
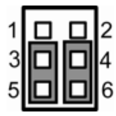
2.3 Jumper Settings

Proper jumper settings configure the **SBC84823** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

<table>
<tr><th>Jumper</th><th colspan="2">Default Setting</th><th>Jumper Setting</th></tr>
<tr><td>JP1</td><td colspan="2">Audio Speak Out/Line Out Selection
Default: Line Out</td><td>Short 1-3, 2-4</td></tr>
<tr><td>JP2</td><td colspan="2">LVDS Voltage Selection
Default: 3.3V</td><td>Short 1-2</td></tr>
<tr><td>JP3</td><td colspan="2">Compact Flash Voltage Selection
Default: 3.3V</td><td>Short 1-2</td></tr>
<tr><td>JP4</td><td colspan="2">Normal Operation/Clear CMOS setting
Default: Normal Operation</td><td>Short 1-2</td></tr>
<tr><td>JP5</td><td colspan="2">Auto Power Button Mode Selection
Default: Disable</td><td>Short 1-2</td></tr>
<tr><td>JP6</td><td colspan="2">CPLD programming interface</td><td>N/A</td></tr>
<tr><td rowspan="2">JP7</td><td rowspan="2">COM3 Mode Select</td><td>CN10 Pin 1: DCD</td><td>Short 3-5</td></tr>
<tr><td>CN10 Pin 9: RI</td><td>Short 4-6</td></tr>
<tr><td rowspan="2">JP8</td><td rowspan="2">COM4 Mode Select</td><td>CN10 Pin 1: DCD</td><td>Short 3-5</td></tr>
<tr><td>CN10 Pin 9: RI</td><td>Short 4-6</td></tr>
<tr><td rowspan="2">JP9</td><td rowspan="2">COM1 Mode Select</td><td>CN17 Pin 1: DCD</td><td>Short 3-5</td></tr>
<tr><td>CN17 Pin 9: RI</td><td>Short 4-6</td></tr>
<tr><td rowspan="2">JP10</td><td rowspan="2">COM2 Mode Select</td><td>CN12 Pin 1: DCD</td><td>Short 3-5</td></tr>
<tr><td>CN12 Pin 9: RI</td><td>Short 4-6</td></tr>
</table>

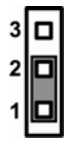
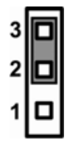
2.3.1 Audio Output Jumper (JP1)

This jumper is to select the Audio output.

Description	Function	Jumper Setting
Audio Output	Line Out (Default)	
	Speaker Out	

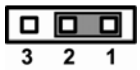
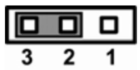
2.3.2 LCD Voltage Selection Jumper (JP2)

The board supports +3.3V or +5V flat panel displays. Configure the jumper **JP2** to the appropriate voltage of the flat panel.

Description	Function	Jumper Setting
LCD Voltage Selection	3.3V (Default)	
	5V	

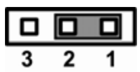
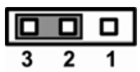
2.3.3 CompactFlash™ Power Selection Jumper (JP3)

This jumper is to select the voltage for CompactFlash™ interface.

Description	Function	Jumper Setting
CompactFlash™ Power Select	3.3V (Default)	
	5V	

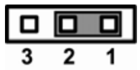
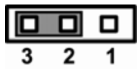
2.3.4 CMOS Clear Jumpers (JP4)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	
	Clear CMOS	

2.3.5 AUTO POWER BUTTON Mode Jumper (JP5)

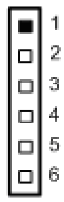
The jumper selects the AUTO Power BUTTON Mode.

Description	Function	Jumper Setting
AUTO Power BUTTON Mode Selection	Disable (Default ATX mode)	
	Enable (AT mode)	

2.3.6 CPLD JTAG Programming Interface Connector (JP6)

The jumper is a 2.0mm Pin header connector for CPLD Interface Connector.

Pin	Signal
1	+3.3V SBY
2	GND
3	TCK
4	TDO
5	TDI



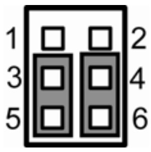
2.3.7 COM1~COM4 Mode Select for Type Jumpers: (JP9, JP10, JP7, JP8)

COM1 (CN17)	JP9
Pin 1=5V	Short 1-3
*Pin 1=DCD	Short 3-5
Pin 9=12V	Short 2-4
*Pin 9=RI	Short 4-6

COM2 (CN12)	JP10
Pin 1=5V	Short 1-3
*Pin 1=DCD	Short 3-5
Pin 9=12V	Short 2-4
*Pin 9=RI	Short 4-6

COM3 (CN10)	JP7
Pin 1=5V	Short 1-3
*Pin 1=DCD	Short 3-5
Pin 9=12V	Short 2-4
*Pin 9=RI	Short 4-6

COM4 (CN10)	JP8
Pin 1=5V	Short 1-3
*Pin 1=DCD	Short 3-5
Pin 9=12V	Short 2-4
*Pin 9=RI	Short 4-6



JP7, JP8, JP9, JP10

2.4 Connectors

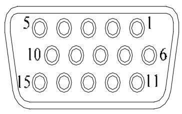
Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the **SBC84823** Series.

Connectors	Label
+8V~+24V Power Connector	ATX1
DDRII RAM Connector	SCN1
CF Card Connector	SCN2
Audio Connector	CN1
LVDS Connector	CN2
LVDS Backlight Connector	CN3
Flat Panel Bezel Connector	CN4
Mini card connector	CN5, CN9
Digital I/O (DIO) Connector	CN6
SATA power connector	CN7
SATA Connector	CN8
COM3,4 Connector	CN10
USB*2 Connector	CN11
COM2 Connector	CN12
SMBUS Connector	CN13
LAN Connector	CN14
USB*2 Stack Connector	CN15
USB*2 Stack Connector	CN16
COM1 Connector	CN17
PS/2 KB/MS Connector	CN18
VGA Connector	CN19

2.4.1 VGA Connector (CN19)

CN19 is a standard 15-pin DB15 connector commonly for the CRT VGA display.

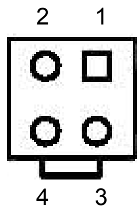
Pin	Signal
1	Red
2	Green
3	Blue
4	N.C
5	Ground (GND)
6	AnalogGround（AGND）
7	AnalogGround（AGND）
8	AnalogGround（AGND）
9	N.C
10	Ground (GND)
11	N.C
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLK



2.4.2 DC POWER JACK Connector (ATX1)

+8V~+24V DC input to this connector.

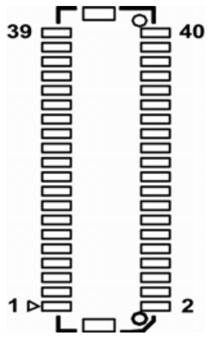
Pin	Signal
1	GND
2	GND
3	+12V
4	+12V



2.4.3 LVDS Flat Panel Connector

CN2 is a 40-pin connector. It is strongly recommended to use the matching JST SHDR-40V-S-B connector.

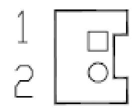
Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	N.C.	12	N.C.
13	N.C.	14	N.C.
15	GND	16	GND
17	N.C.	18	N.C.
19	N.C.	20	N.C.
21	GND	22	GND
23	Channel A D0-	24	N.C.
25	Channel A D0+	26	N.C.
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



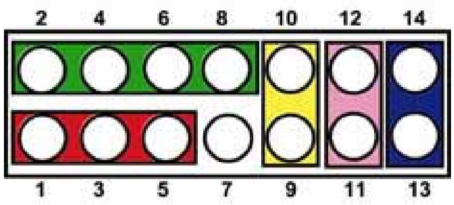
2.4.4 Serial ATA Power Connector (CN7)

CN7 is a 2.5mm wafer connector for Serial ATA Power.

Pin	Signal
1	+5V
2	GND



2.4.5 Flat Panel Bezel Connector (CN4)



- **Power LED**
  Pin 1 and Pin 5 connect the system power LED indicator with the corresponding switch on the case. Pin 1 is assigned as +, and Pin 3 & Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**
  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**
  Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

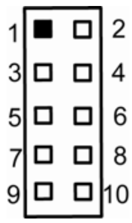
- **System Reset Switch**
  Pin 11 and 12 connect to the case-mounted reset switch that reboots your computer without turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**
  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.6 Digital I/O Connector (CN6)

CN6 is an 8-channel digital I/O connector that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The DIO

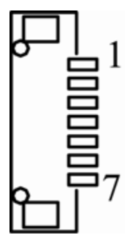
Pin	Signal	Pin	Signal
1	Digital Input 1	2	Digital Output 1
3	Digital Input 2	4	Digital Output 2
5	Digital Input 3	6	Digital Output 3
7	GND	8	Digital Output 4
9	GND	10	Digital Output 5



2.4.7 LVDS Backlight Connector (CN3)

CN3 is DF13-7S-1.25C 7-pin connectors for inverter. We strongly recommend you to use the matching DF13-7S-1.25C connector.

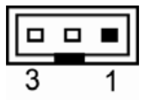
Pin	Signal
1	+12V
2	+12V
3	+5V
4	ENABLE +5V
5	GND
6	GND
7	GND



2.4.8 SMBUS Connector (CN13)

CN13 is for SMBUS interface support.

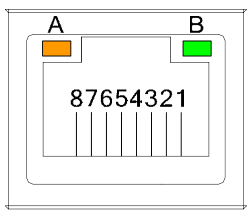
Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.9 Ethernet LAN Connector (CN14)

CN14 is the RJ-45 connector is for Ethernet. Just plug in one end of the cable and connect the other end (phone jack) to a 1000/100/10-Base-T hub.

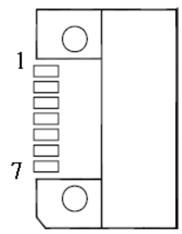
Pin	Signal
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-
A	Active LED (Yellow)
B	100 LAN LED (Green)/ 1000 LAN LED (Orange)



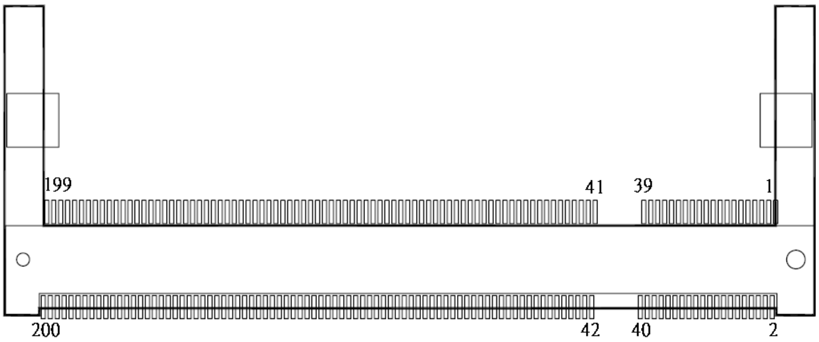
2.4.10 Serial ATA Connector (CN8)

CN8 is for high-speed SATA interface port and can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.4.11 DDRII SODIMM Connector (SCN1)



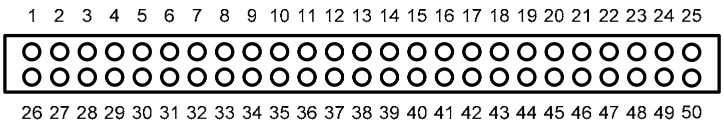
2.4.12 CompactFlash™ Socket (SCN2)

The board is equipped with a CompactFlashTM disk type-II socket on the solder side that supports the IDE interface CompactFlashTM disk card with DMA mode supported. The socket is especially designed to avoid any incorrect installation of the CompactFlashTM disk card.

When installing or removing the CompactFlash^{TM} disk card, please make sure that the system power is off. The CompactFlash^{TM} disk card is defaulted as the C: or D: disk drive in your PC system.

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
Pin	**Signal**	**Pin**	**Signal**

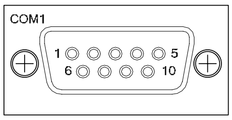
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND



2.4.13 Serial Port1 Connector (CN17)

CN17 is a standard DB-9 connector for COM1.

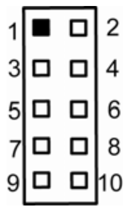
Pin	Signal
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator



2.4.14 Serial Port 2 Connectors (CN12)

The RS-232 pin assignment is listed on the following table for COM2.

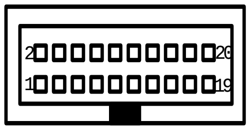
Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC



2.4.15 Serial Port 3, 4 Connectors (CN10)

Here is the pin assignment list for your reference.

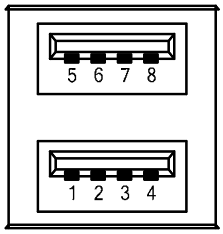
Pin	Signal	Pin	Signal
1	NDCD3	11	NDCD4
2	NDSR3	12	NDSR4
3	NRX3	13	NRX4
4	NRTS3	14	NRTS4
5	NTX3	15	NTX4
6	NCTS3	16	NCTS4
7	NDTR3	17	NDTR4
8	NRI3	18	NRI4
9	GND	19	GND
10	N.C	20	N.C



2.4.16 USB Port Connector (CN15,CN16)

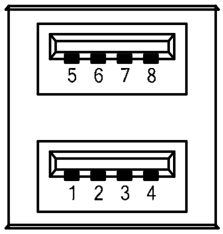
CN15

Pin	Signal	Pin	Signal
1	USB VCC0 (5VSBY)	5	USB VCC0 (5VSBY)
2	USB D0-	6	USB D1-
3	USB D0+	7	USB D1+
4	Ground (GND)	8	Ground (GND)



CN16

Pin	Signal	Pin	Signal
1	USB VCC0 (5VSBY)	5	USB VCC0 (5VSBY)
2	USB D2-	6	USB D3-
3	USB D2+	7	USB D3+
4	Ground (GND)	8	Ground (GND)

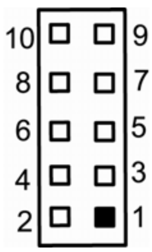


2.4.17 Internal USB Connector (CN11)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. This is a 10-pin standard USB connector.

NOTE USB D6 supports USB2.0 only.

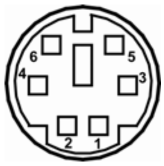
Pin	Signal	Pin	Signal
1	USB VCC1 (5VSBY)	2	USB VCC1 (5VSBY)
3	USB D4-	4	USB D6-
5	USB D4+	6	USB D6+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)



2.4.18 PS/2 Keyboard and Mouse Connector (CN18)

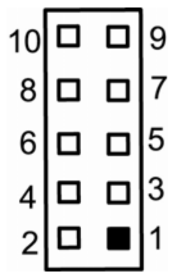
The board supports a keyboard and Mouse interface. CN18 is a DIN connector for PS/2 keyboard connection via "Y" Cable.

Pin	Signal
1	Keyboard Data
2	Mouse Data
3	GND
4	VCC
5	Keyboard Clock
6	Mouse Clock



2.4.19 Audio Phone Jack Connector (CN1)

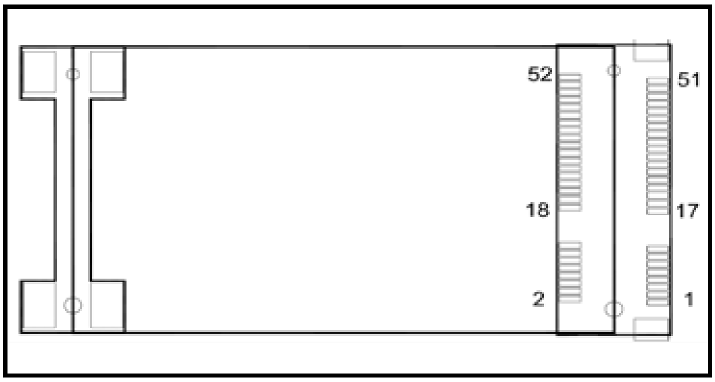
Pin	Signal	Pin	Signal
1	MIC_IN	2	Ground (GND)
3	LINE_IN_L	4	Ground (GND)
5	LINE_IN_R	6	Ground (GND)
7	AUDIO_OUT_L	8	Ground (GND)
9	AUDIO_OUT_R	10	Ground (GND)



2.4.20 Mini PCI-Express Card Connector: (CN5,CN9)

CN5,CN9 is a PCI Express Mini Card connector with support of USB interface only. A PCI Express Mini Card can be applied to USB 1.1 and 2.0.

NOTE The Mini Card PCI-Express interface can be supported if we remove SATA function by BOM options.



Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5V
7	GND	8	N.C
9	GND	10	N.C
11	CLK-	12	N.C
13	CLK+	14	N.C
15	GND	16	N.C
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	PERST#
23	PERN1	24	+3.3VSB
25	PERP1	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETN1	32	SMB_DATA
33	PETP1	34	GND
35	GND	36	USB_D-
37	N.C	38	USB_D+

39	N.C	40	GND
41	N.C	42	N.C
43	N.C	44	N.C
45	N.C	46	N.C
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3V

CHAPTER 3
HARDWARE DESCRIPTION

3.1 Microprocessors

The **SBC84823** Series supports Intel® ATOM™ processor Z510PT/Z520PT which make your system operated under Windows 2000/XP, and Linux environment. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The **SBC84823** Series uses Award Plug and Play BIOS with a single 8Mbit FWH Flash, DMI, Plug and Play.

3.3 System Memory

The **SBC84823** Series industrial CPU card supports one 200-pin unbuffered DDR2 SODIMM socket for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB. The Device density supports 512Mb and 1024Mb with the width of x16.

3.4 I/O Port Address Map

The Intel® ATOM™ processor Z510PT/Z520PT can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-02D 024-025 028-029 02C-02D	Interrupt controller #1
02E-02F	Forwarded to LPC(LPC Super I/O 2)
030-031 034-035 038-039 03C-03D	Interrupt controller #2
040-043 050-053	Timer/Counter (8254)
04E-04F	Forwarded to LPC(LPC Super I/O 1)
060-06F	Forwarded to LPC(Microcontroller for Keyboard Controller)
070-077	Real time clock, NMI
080-091	DMA page register

092	Processor I/F(Reset Generator)
093-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Processor I/F
0F8-0FF	Math processor
170-177	Forward to SATA(SATA Controller)
1F0-1F7	Forward to SATA(SATA Controller)
250-25F	HR I/O
300-31F	Prototype card
376	Forward to SATA(SATA Controller)
378-37F	Parallel Port (LPT)
380-38F	SDLC #2
3A0-3AF	SDLC #1

Address	Devices
3B0-3BF	MDA video card
3C0-3CF	EGA card
3D0-3DF	CGA card
3F6	Forward to SATA (SATA Controller)
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)

3.5 Interrupt Controller

The **SBC84823 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	—
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	—
IRQ11	—
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

CHAPTER 4

PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2 Control Keys

Up arrow	Move to the previous item
Down arrow	Move to the next item
Left arrow	Move to the left side
Right arrow	Move to the right side
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

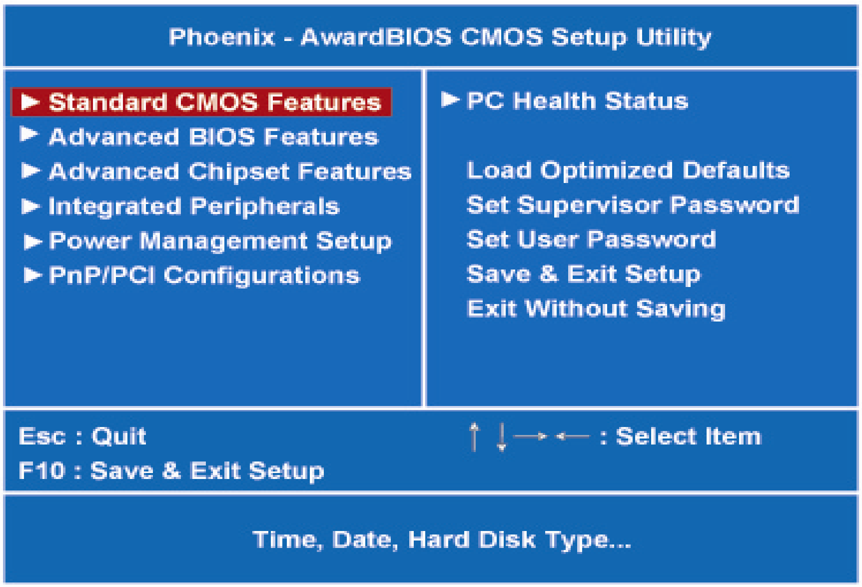
4.3 Getting Help

Main Menu The online description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

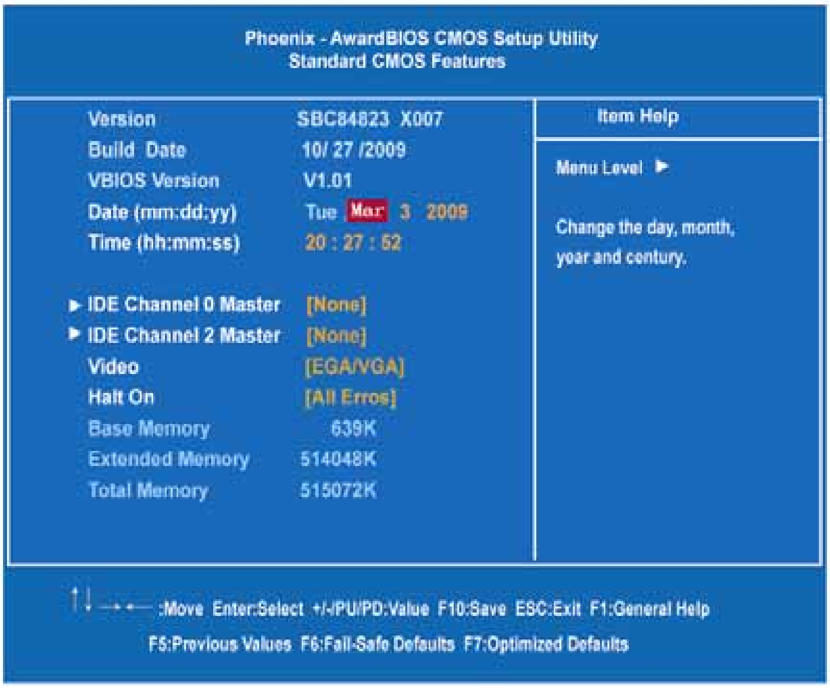


NOTE *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

NOTE It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5 Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp>



<PgDn> key to select the value you want in each item.

- **Date**

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

- **Time**

This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master/Primary Slave**

These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter

improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type. If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer. If the HDD interface controller supports ESDI, select “Type 1”. If the HDD interface controller supports SCSI, select “None”. If the HDD interface controller supports CD-ROM, select “None”.

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

If there is no hard disk drive installed, select NONE and press <Enter>.

- **Video**

Select the display adapter type for your system.

- **Halt On**

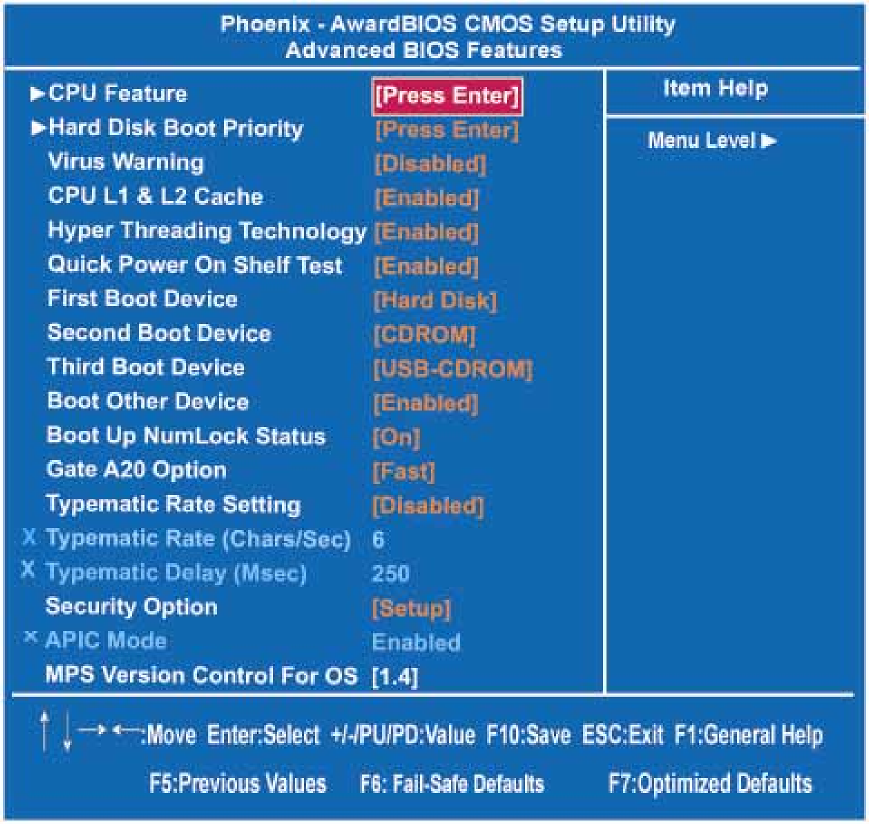
This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

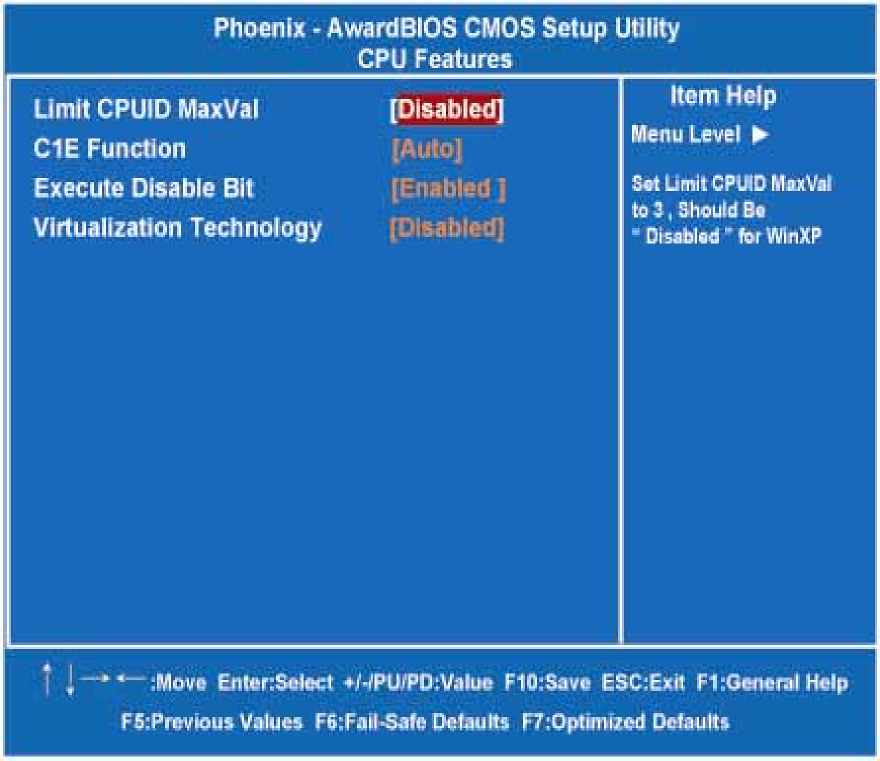
4.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.



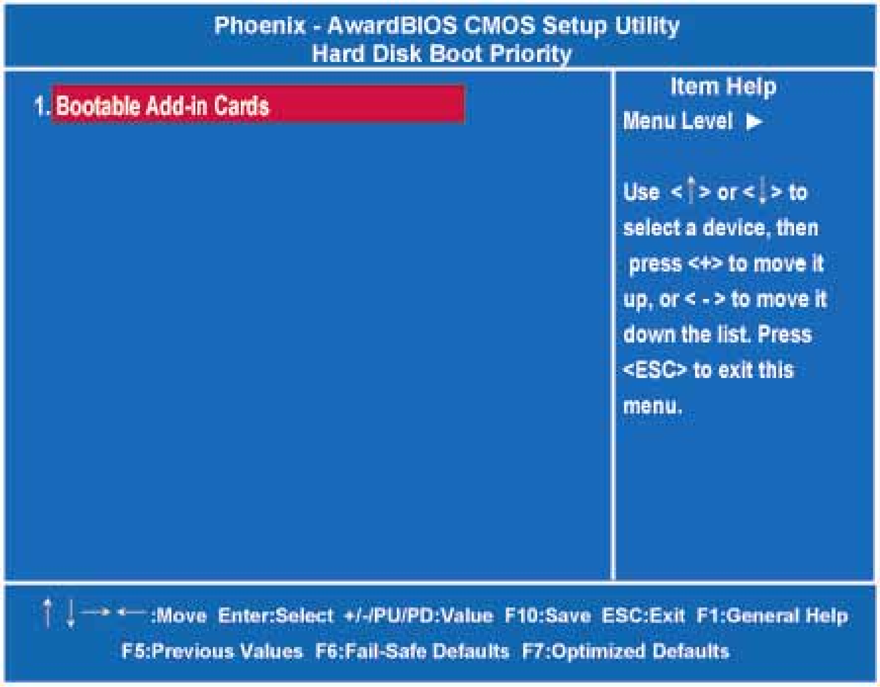
- **CPU Features**

Scroll to this item and press <Enter> to view the CPU Feature sub menu.



- **Harddisk boot priority**

Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority



- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. There is a wide range of options for your selection.
- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "Enabled".
- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is "On".
- **Security Option**
  This item allows you to limit access to the system and Setup, or iust to Setup. The default value is "Setup".

System
Setup

System System requires correct password before booting, and also before permitting access to the Setup page.

Setup System will boot, but requires correct password before permitting access to Setup. (Default value)

NOTE *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**

APIC (Advanced Programmable Interrupt Controller) mode is enabled that provides symmetric multiprocessing (SMP) for systems.

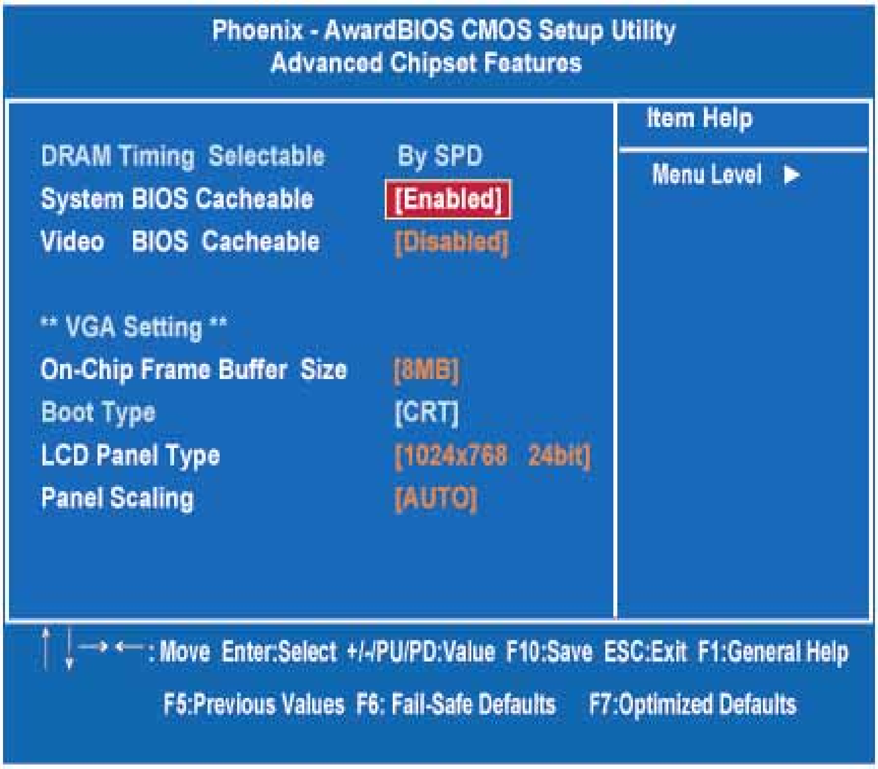
- **MPS Version Control For OS**

This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

Press <Esc> to return to the Main Menu page.

4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.



- **DRAM Timing Selectable**

Use this item to increase the timing of the memory. This is related to the cooling of memory.

- **System BIOS Cacheable**

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is "Disabled".

- **Video BIOS Cacheable**

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

***** VGA Setting *****

- **On-Chip Frame Buffer Size**

Use this item to set the VGA frame buffer size.

- **Boot Type**

This item is to select Display Device that the screen will be shown.

- **LCD Panel Type**

This item is to allow you to adjust the panel resolution.

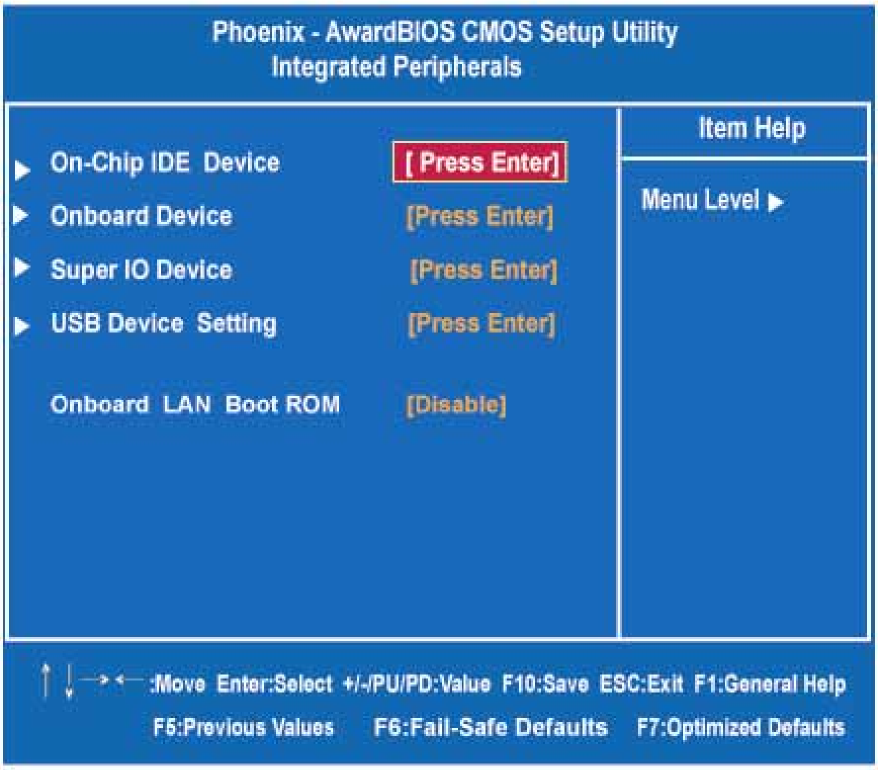
- **Panel Scaling**

This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.

Press <Esc> to return to the Main Menu page.

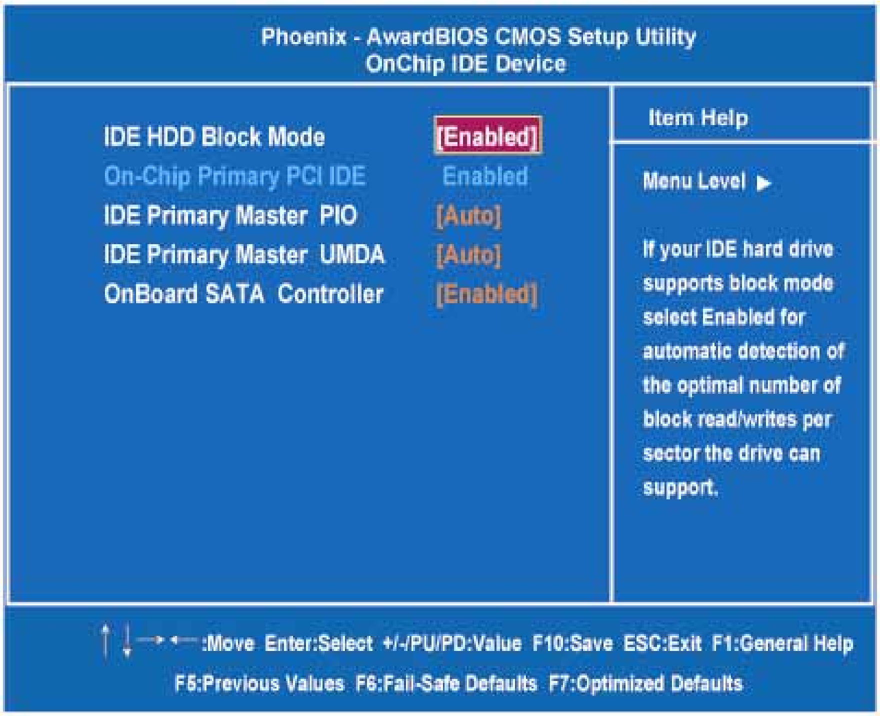
4.8 Integrated Peripherals

This section allows you to configure your OnChip IDE Device, Onboard Device, SuperIO Device and USB Device Setting.



- **OnChip IDE Device**

Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.



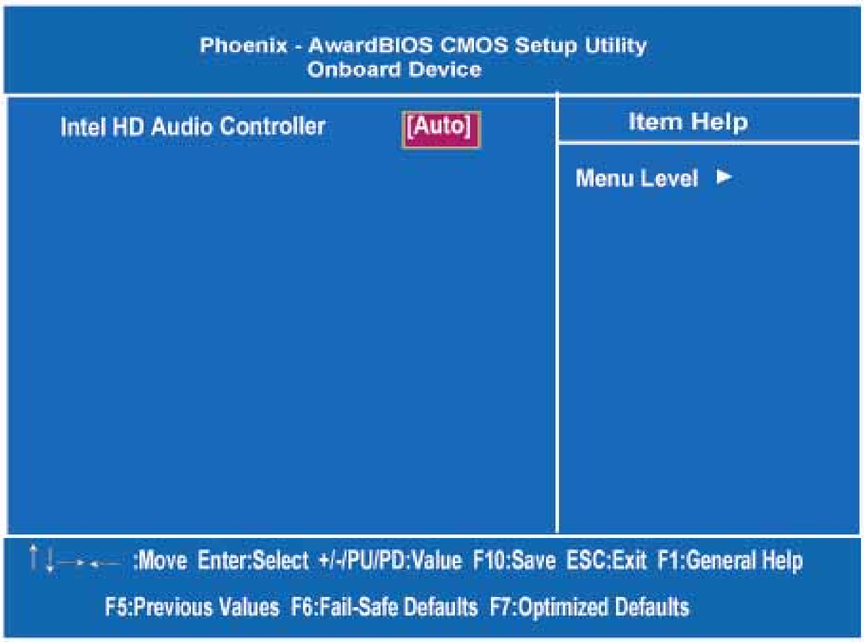
➢ **IDE HDD Block Mode**

Block mode is also called block transfer, multiple commands, ormultiple sectors read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Device**

Scroll to this item and press <Enter> to view the sub menu Onboard Device.

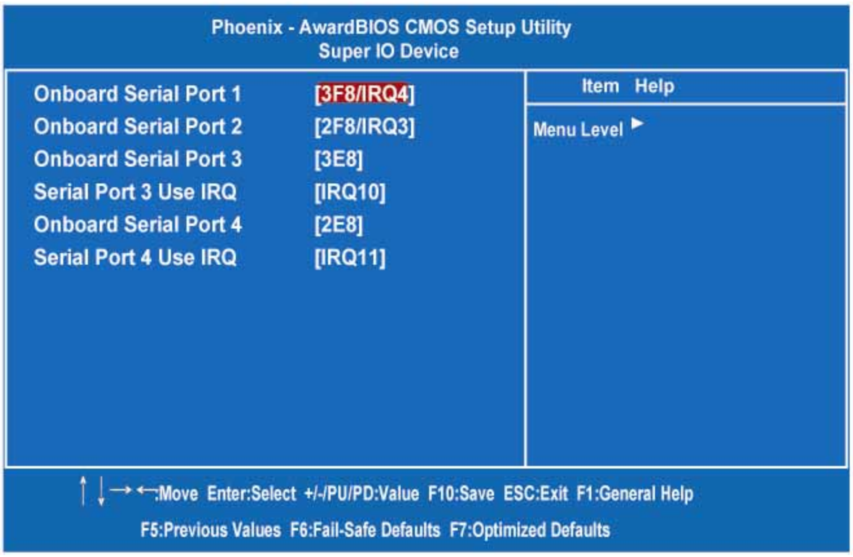


➢ **Intel HD Audio Controller**

Choose Auto to enable an Intel HD Audio controller.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**



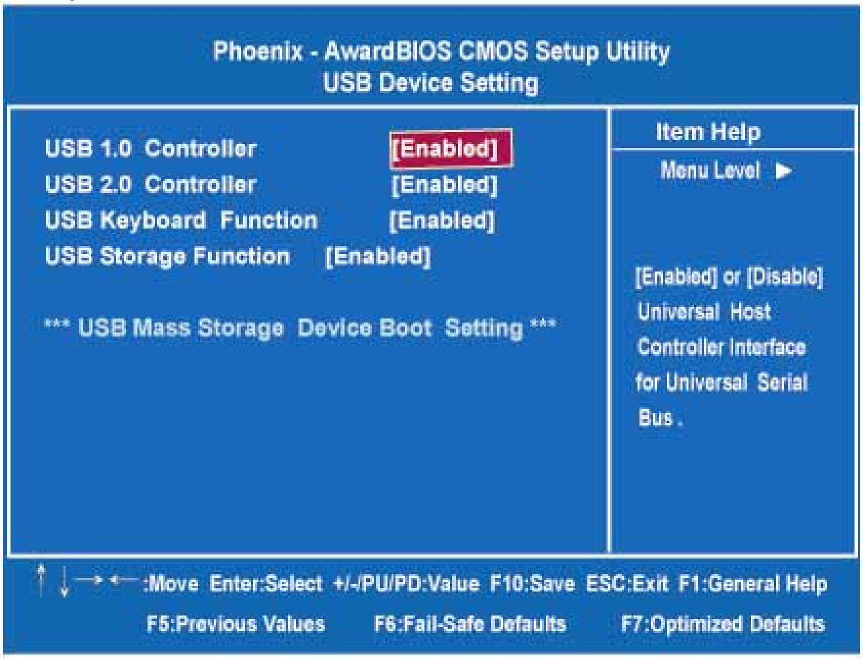
➢ **Onboard Serial Port 1/2/3/4**

Select an address and corresponding interrupt for the serial port. There are several options for your selection.

Press <Esc> to return to the Integrated Peripherals page.

- **USB Device Setting**

Scroll to this item and press <Enter> to view the sub menu USB Device Setting.



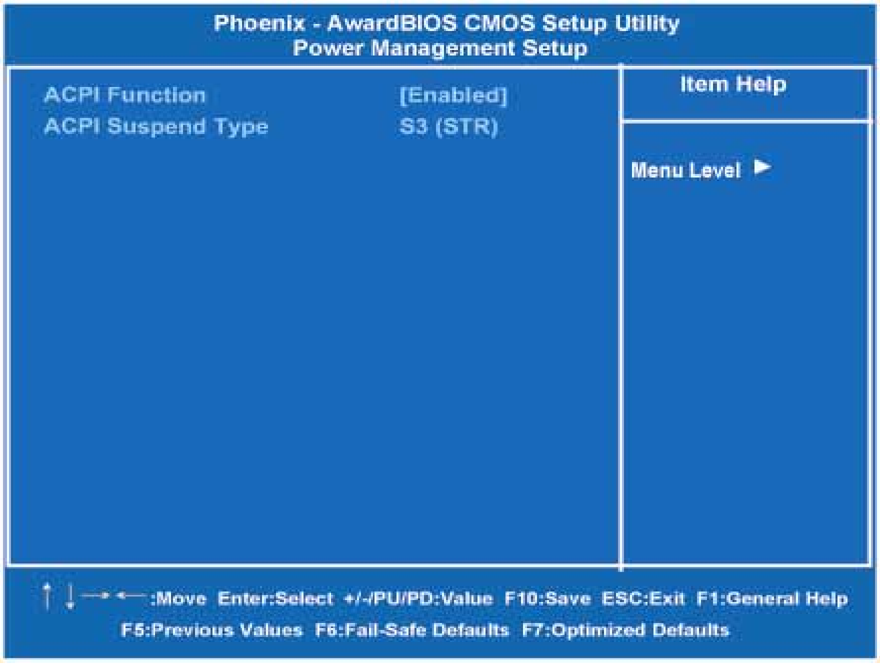
Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Lan Boot ROM**

Use this item to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

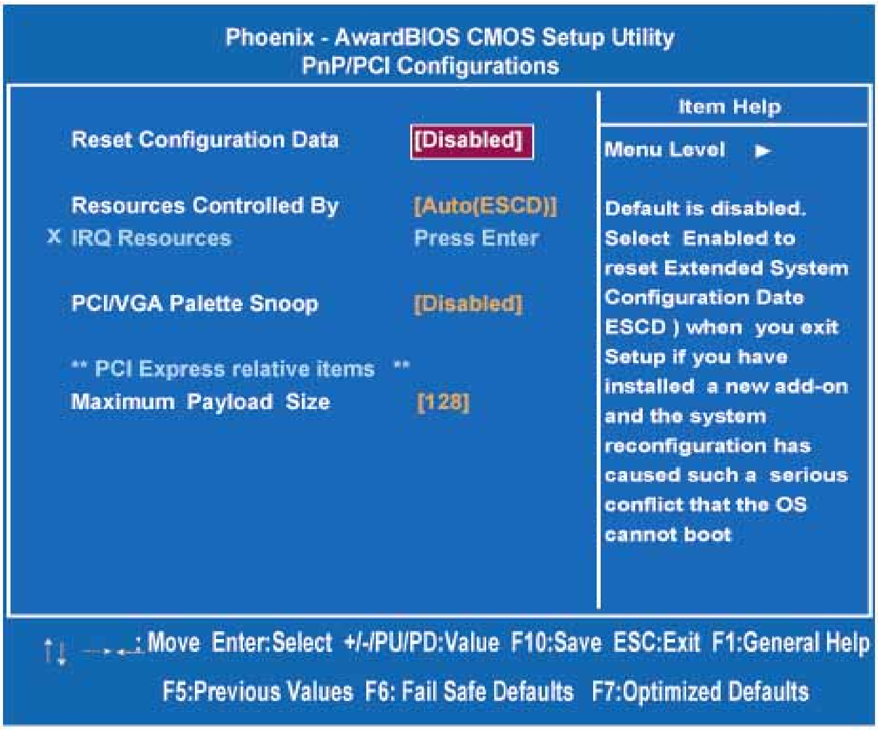


- **ACPI Function**

Advanced Configuration and Power Management (ACPI).
The function is always "*Enabled*".

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.



- **Reset Configuration Data**

Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.

- **Resources Controlled By**

The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment and Used DMA fields disappear as the BIOS automatically assign them. The default value is “Auto”. The other option is “Manual”

- **IRQ Resources**

When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
2. PCI/ISA PnP Devices compliant with the Plug and Play standard,

whether designed for PCI or ISA bus architecture.The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**

Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

**** PCI Express relative items ****

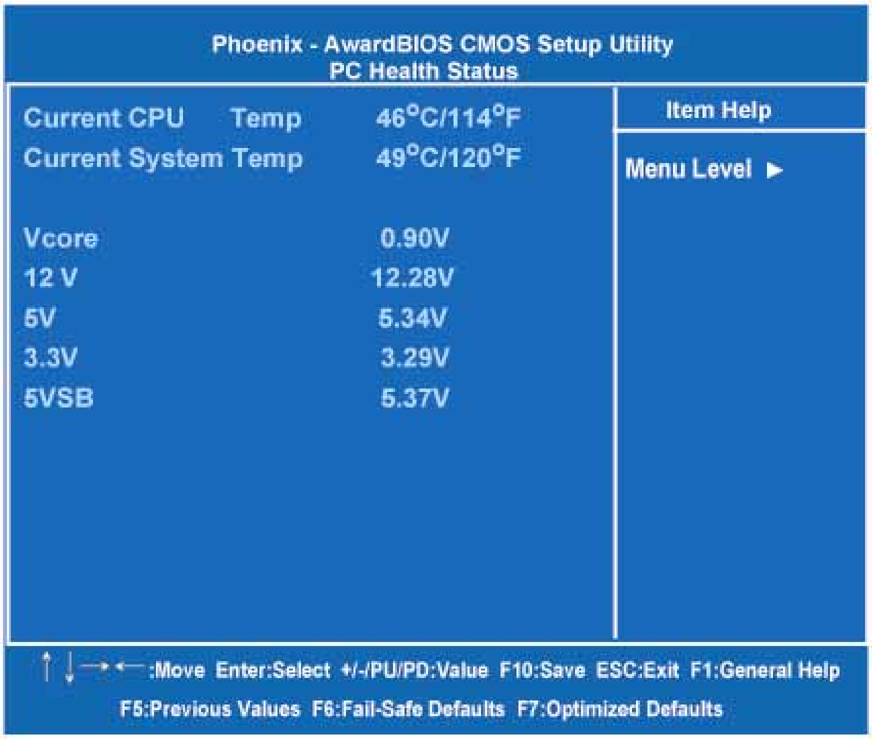
- **Maximum Payload Size**

When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

4.11 PC Health Status

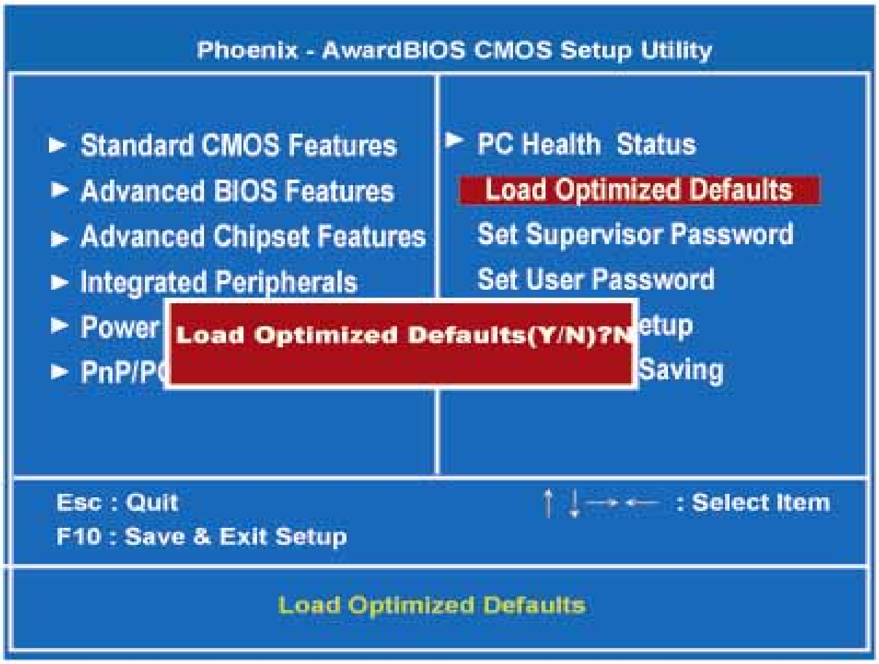
This section supports hardware monitoring that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



Press <Esc> to return to the Main Menu page.

4.12 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.13 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1 **Supervisor password:** You can enter and change the options on the setup menu.
2 **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

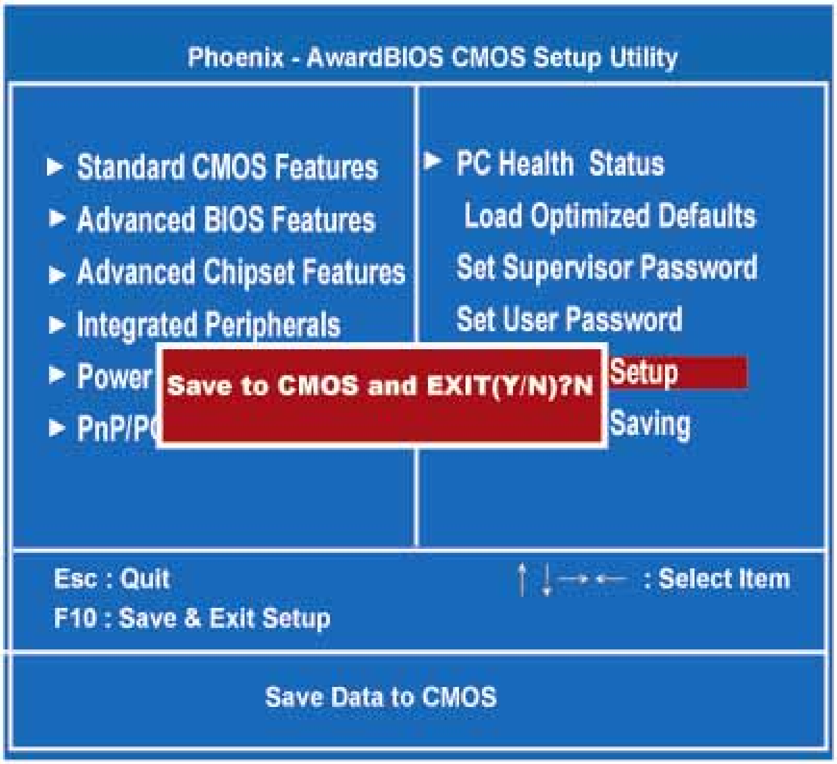
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password is required during booting up and entry into the Setup; if it is set as “Setup”, a prompt will only appear before entering the Setup.

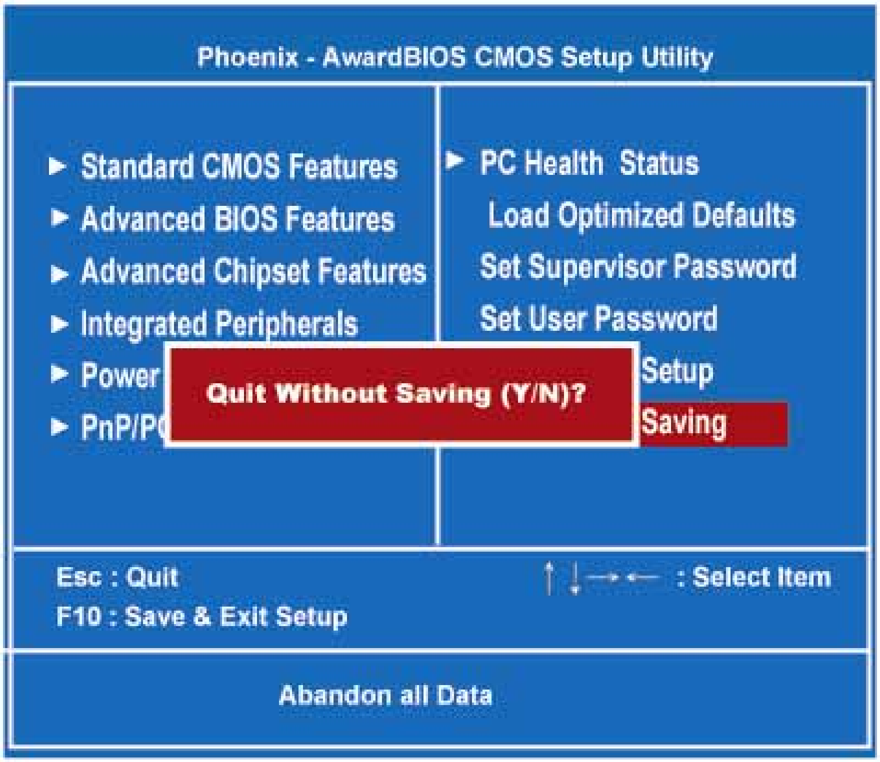
4.14 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



4.15 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type “Y”, and it will quit the Setup utility without saving your modifications. Type “N” to return to the Setup utility.



CHAPTER 5

INSTALLATION OF DRIVERS

The device drivers are located on the Product Information CD-ROM that comes with the SBC84823 Series package. The auto-run function of drivers will guide you to install the utilities and device drivers under a Windows system. You can follow the onscreen instructions to install these devices:

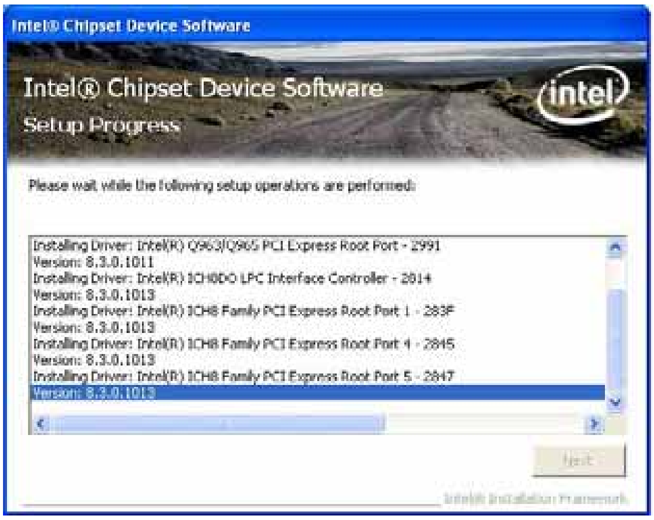
- Chipset
- VGA
- LAN
- Audio

5.1 Installing Chipset Driver

1 Run the SETUP.EXE program from the driver directory in your
2 An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.
3 Please wait while running the following setup operations.




Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No


Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) Q963/Q965 PCI Express Root Port - 2991
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH8DO LPC Interface Controller - 2814
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 4 - 2845
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 5 - 2847
Version: 8.3.0.1013
Next

(3-1)



(3-2)

4. Click "Finish" to complete the setup process.
5. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and go on next step.

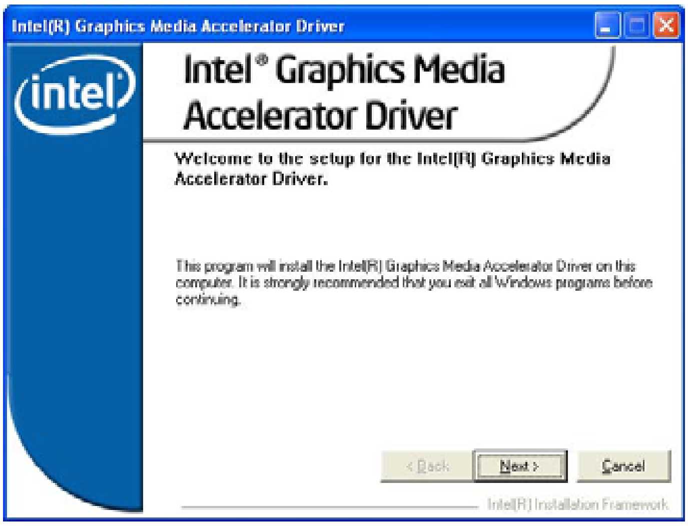


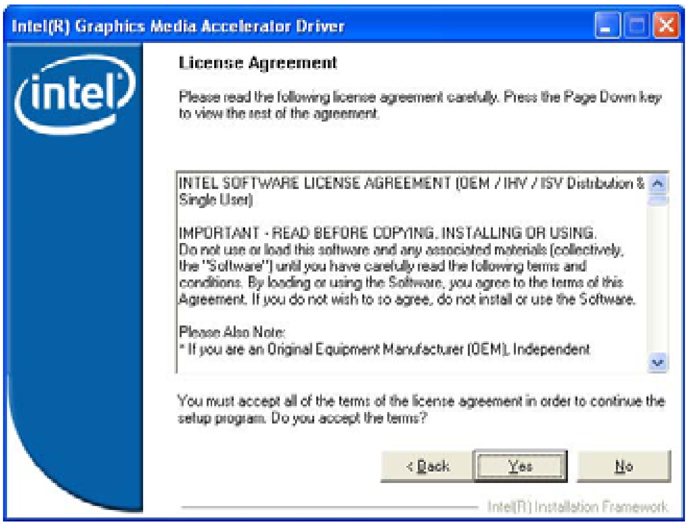
5.2 Installing VGA Driver

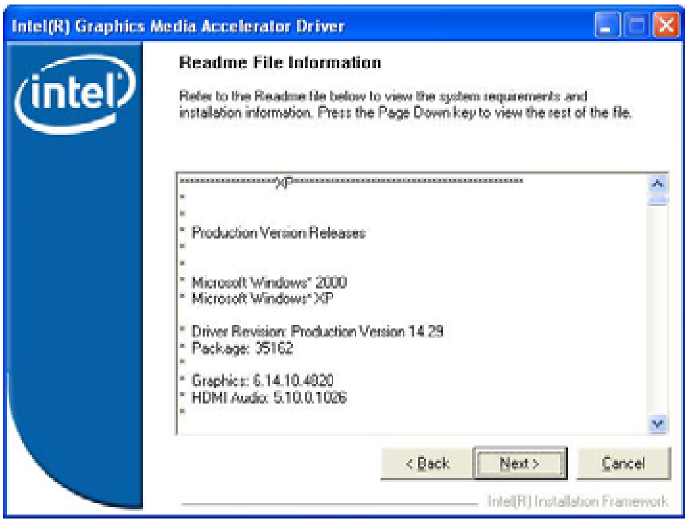
1 Run the SETUP.EXE program from the driver directory in your driver CD. Click “Next” to next step.

2 An Intel® License Agreement appears to show you the important information. Click “Yes” to next step.

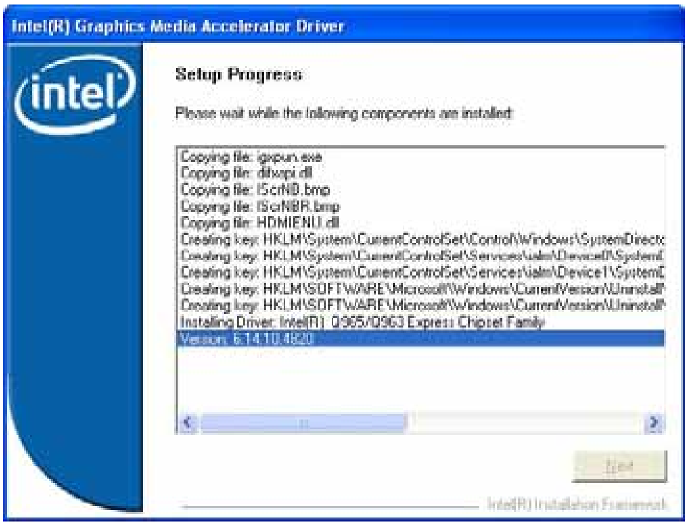
3 The message of Readme File Information appears to show you the system requirements and installation information. Please click “Next”.



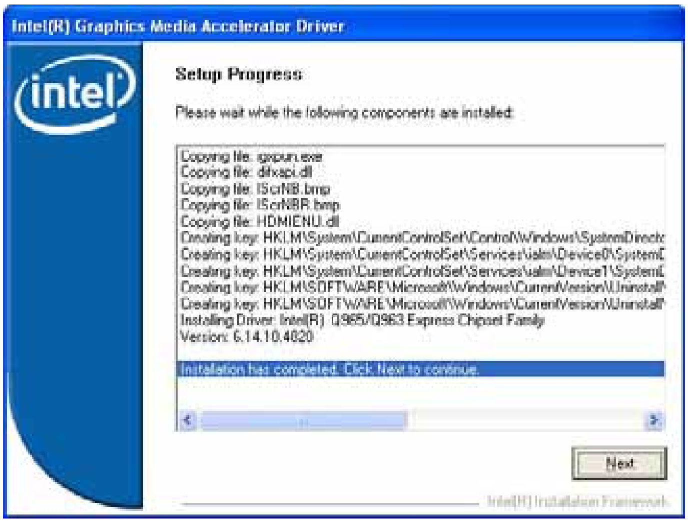


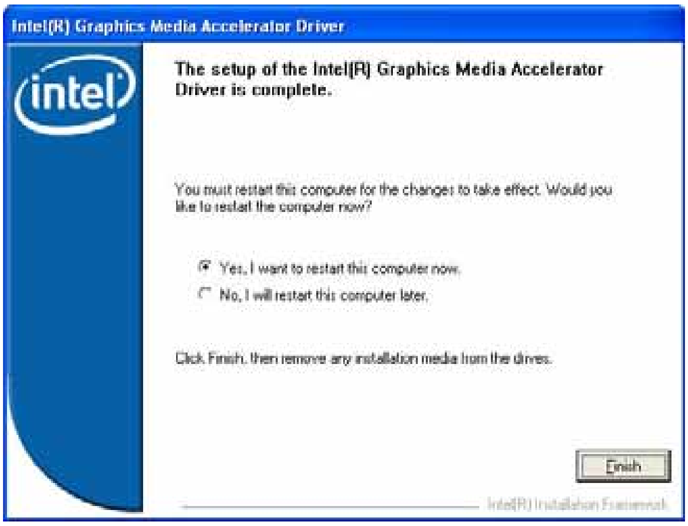


4. Please wait while running the following setup operations.



4. When this message appears, please click "Next".
5. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and click "Finish" to complete the installation.

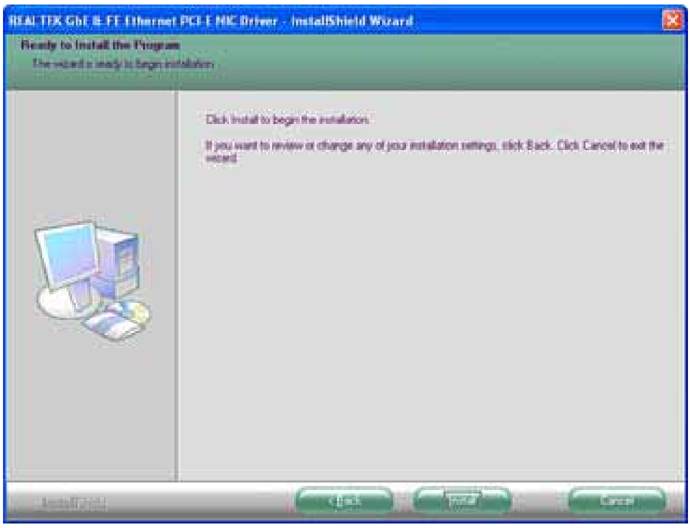


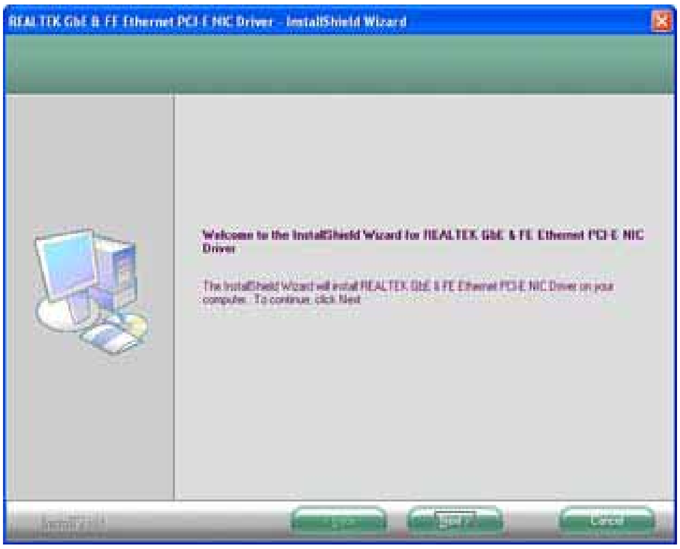


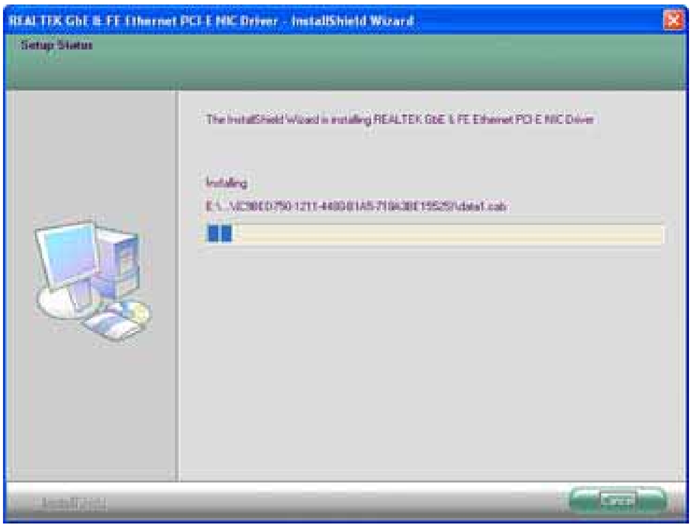
NOTE ***After installing VGA driver, if you restart, please press Hot Key "Ctrl+Alt+F1" to back VGA because the default display is LVDS LCD.***

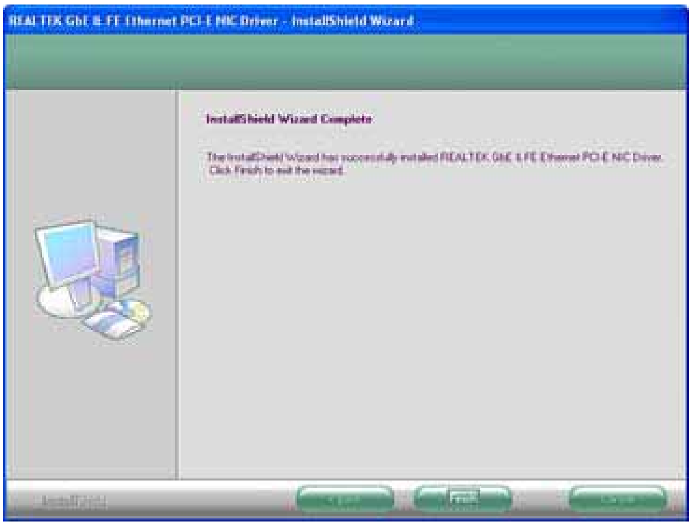
5.3 Installing LAN Driver

Run the InstallShield Wizard for Ethernet from the driver
Click "Install" to start the installation.
1. Please wait while running the following installation operation.
2. Click "Finish" to complete the installation.






REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Setup Status
The InstallShield Wizard is installing REALTEK GbE & FE Ethernet PCI-E NIC Driver
Installing
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
Finish

5.4 Installing Audio Driver

1. Run the InstallShield Wizard for Audio from the driver directory in yourdriver
2. CD. Click "Next" to next step.

Please wait while running the following installation operation.





3. You will be asked to reboot your computer when the installation is completed. Please click “Yes, I want to restart my computer now” if you don’t need to install any other drivers. Otherwise, please click “No, I will restart my computer later”, and click “Finish” to complete the installation.



APPENDIX A

WATCHDOG TIMER

Watchdog Timer Setting

(From Super I/O W83627DHG-P)

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT:
O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
WDT Function:
O 2E 2D ;
O 2F 20 ; Mulit function pin select for WDT
↓
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT:
O 2E 30
O 2F 01
↓
Set Second or Minute :
O 2E F5
O 2F N N=00 or 08 (See below table)
↓
Set base timer :
O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
; IF to disable WDT:
O 2E 30
O 2F 00 ; Can be disable at any time

- Timeout Value Range
  - 1 to 255
  - Minute / Second
- Program Example

Watchdog Timer can be set to system reset after 5-second timeout.

O 2E 87	
O 2E 87	
O 2E 2D	
O 2F 20	
O 2E 07	
O 2F 08	Logical Device 8
O 2E 30	Activate
O 2F 01	
O 2E F5	
O 2F N	Set Minute or Second N=08 (Min),00(Sec)
O 2E F6	
O 2F M	Set Value M = 00 ~ FF

APPENDIX B
DIGITAL I/O

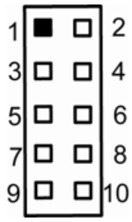
Digital I/O Software Programming

Program deafault setting: 3IN/5OUT (W83627DHG)

GPI	GPO
O 2E 87	O 2E 87
O 2E 87	O 2E 87
O 2E 07	O 2E 07
O 2F 09	O 2F 09
O 2E 30	O 2E 30
O 2F 02	O 2F 02
O 2E F9	O 2E F9
O 2F 00	O 2F 00
O 2E F0	O 2E F0
O 2F 07	O 2F 07
O 2E F1	O 2E F1
I 2F	O 2F M (Note)

Pin	Signal	Pin	Signal
1	Digital Input 1	2	Digital Output 1
3	Digital Input 2	4	Digital Output 2
5	Digital Input 3	6	Digital Output 3
7	GND	8	Digital Output 4
9	GND	10	Digital Output 5

CN6



NOTE: M is Output Data

Digital Output					Digital Input		
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
DO4	DO3	DO2	DO1	DO0	DI2	DI1	DI0